

ONKYO® SERVICE MANUAL

Audio Video Control Receiver MODEL TX-SV343



Black model

BMDN/BMDC	120V AC, 60Hz
BMP/BMPT	230V AC, 50Hz
BMGK/BMWT	120V/220V-230V 50Hz/60Hz
BMPA	220V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

TX-SV343

AMPLIFIER SECTION

Power Output

USA & Canadian models: Stereo Mode
60 watts per channel, min. RMS into 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% THD.

Surround Mode
 Front L/R Channels
 2 × 50 W (1 kHz, 0.08%, 8 ohms)
 Center Channel
 50 W (1 kHz, 0.15%, 8 ohms)
 Rear Channels (Rear channel only driven)
 15 W + 15 W (1 kHz, 0.3%, 8 ohms)

European models: Stereo mode
 2 × 60 watts at 6 ohms (DIN)
 Surround mode
 Front L/R and Center Channels
 3 × 50 watts at 6 ohms (DIN)
 Rear Channels (Rear channel only driven)
 15 watts + 15 watts at 6 ohms (DIN)

Asian models: Stereo mode
 2 × 80 watts at 6 ohms, 1 kHz (EIAJ)
 Surround mode
 Front L/R and Center Channels
 3 × 65 watts at 6 ohms, 1 kHz (EIAJ)
 Rear Channels (Rear Channel only driven)
 20 watts + 20 watts at 6 ohms, 1 kHz (EIAJ)

Total Harmonic Distortion: 0.08% at rated power (Front)

IM Distortion: 0.08% at rated power (Front)

Damping Factor: 60 at 8 ohms (Front)

Input Sensitivity and Impedance

Phono: 2.5 mV, 50 kohms

Line (CD, Tape, TV/AUX Video-1, 2):

200 mV, 50 kohms

Video (Video-1,2): 1 Vp-p, 75 ohms

Output Level and Impedance: Rec Out (Tape): 200 mV, 2.2 kohms

Out (Video-2): 200 mV, 2.2 kohms

Pre Out (Subwoofer): 1 V, 2.2 kohms

Video (Video-2, Monitor):

1 Vp-p, 75 ohms

Phono Overload: 120 mV RMS. at 1 kHz, 0.5% T.H.D.

Frequency Response: 20 Hz to 30 kHz, ±1 dB

RIAA Deviation: 20 Hz to 20 kHz, ±0.8 dB

Tone Control

Bass: ±10 dB at 100 Hz

Treble: ±10 dB at 10 kHz

Signal-to-Noise Ratio

Phono: 80 dB (IHF A, 5 mV input)

CD/Tape: 100 dB (IHF A)

Muting: -50 dB

VIDEO SECTION

Signal sensitivity and impedance: 1 Vp-p, 75 ohms (VDP/VCR input, output)

TUNER SECTION

FM

Tuning Range:

U.S.A. & Canadian models: 87.5 — 108.0 MHz (100 kHz steps)

Other areas: 87.50 — 108.00 MHz (50 kHz steps)

Usable Sensitivity

Mono: 11.2 dBf, 1.0 μV (75 ohms IHF)

Stereo: 17.2 dBf, 2.0 μV (75 ohms IHF)

50dB Quieting Sensitivity

Mono: 18.2 dBf, 2.2 μV (75 ohms)

Stereo: 38.2 dBf, 22 μV (75 ohms)

Capture Ratio:

1.5 dB

Image Rejection Ratio

U.S.A. & Canadian models: 40 dB

Other area models: 85 dB

IF Rejection Ratio:

90 dB

Signal-to-Noise Ratio

Mono: 73 dB (IHF)

Stereo: 67 dB (IHF)

Alternate Channel Attenuation

Mono: 55 dB (IHF)

Selectivity:

50 dB (DIN, ±300 kHz, 40 kHz Devi.)

AM Suppression Ratio:

50 dB

Total Harmonic Distortion

Mono: 0.15%

Stereo: 0.25%

Frequency Response:

30 Hz — 15 kHz, ±1.5 dB

Stereo Separation:

45 dB at 1 kHz

30 dB at 100 Hz — 10 kHz

AM

Tuning Range

U.S.A. & Canadian models: 530—1,710 kHz (10 kHz steps)

European models: 522—1,611 kHz (9 kHz steps)

Worldwide models: 531—1,602 kHz (9 kHz steps),

530—1,710 kHz (10 kHz steps)

Usable Sensitivity:

30 μV

Image Rejection Ratio:

40 dB

IF Rejection Ratio:

40 dB

Signal-to-Noise Ratio:

40 dB

Total Harmonic Distortion:

0.7%

GENERAL

Power Supply

U.S.A. & Canadian models: AC 120 V, 60 Hz

European & Australian models: AC 230 V, 50 Hz

Worldwide models: AC 230-220 V and 120 V switchable, 50/60 Hz

Power Consumption

U.S.A. & Canadian models: 2.7 A

Other area models: 220 W

Dimensions (W × H × D):

435 × 150 × 322 mm

17-1/8" × 5-7/8" × 12-11/16"

Weight:

8.2 kg, 18. lbs.

REMOTE CONTROL RC-328S

Transmitter: Infrared


Signal range: Approx. 5 meters, 16 ft.


Power supply: Two "AA" batteries (1.5 V × 2)

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce dernier est indique la qu le present symbol est appose.

Circuit No.	Part No.	Description
F901	252164Y	5A-UL/T-237,Primary <D/W>
F902	252075	2.5A-SE-EAK,Primary <W,K,A>
F902,F903	252075Y	2.5A-SE-EAK, Primary <P,T>
NOTE:		
		<D>: 120V model only
		<P>: 230V model only
		<W>: Worldwide model only
		<K>: Korean model only
		<A>: Australian model only
		<T>: Taiwanese model only

2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Press and hold down the VIDEO-1 button, then press the SPEAKER-A button.
2. After "clear" is displayed, the preset memory and each mode stored in then memory, such as surround, are initialized and will return to the factory settings.

3. Safety-check out

(Only U.S.A. model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.

Specifications: 3.3 Mohm \pm 10% at 500V.

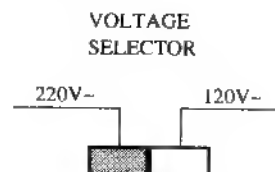
4. Change of voltage

Worldwide models are equipment with a voltage selector to conform with local power supplies. This switch is located on the back panel.

Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

This switch is set to 220V at the factory. Voltage is changed by

sliding the groove in the switch with the screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



5. Memory preservation

This unit does not require memory preservation batteries.

A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.

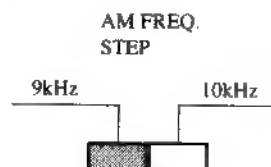
The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month the keep the back-up system operative.

The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

6. Setting the tuning step frequency

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 9 kHz at the factory, but may have to be reset to 10 kHz depending on the area where the unit is used.

AM band step
Europe: 9 kHz
U.S.A.: 10 kHz

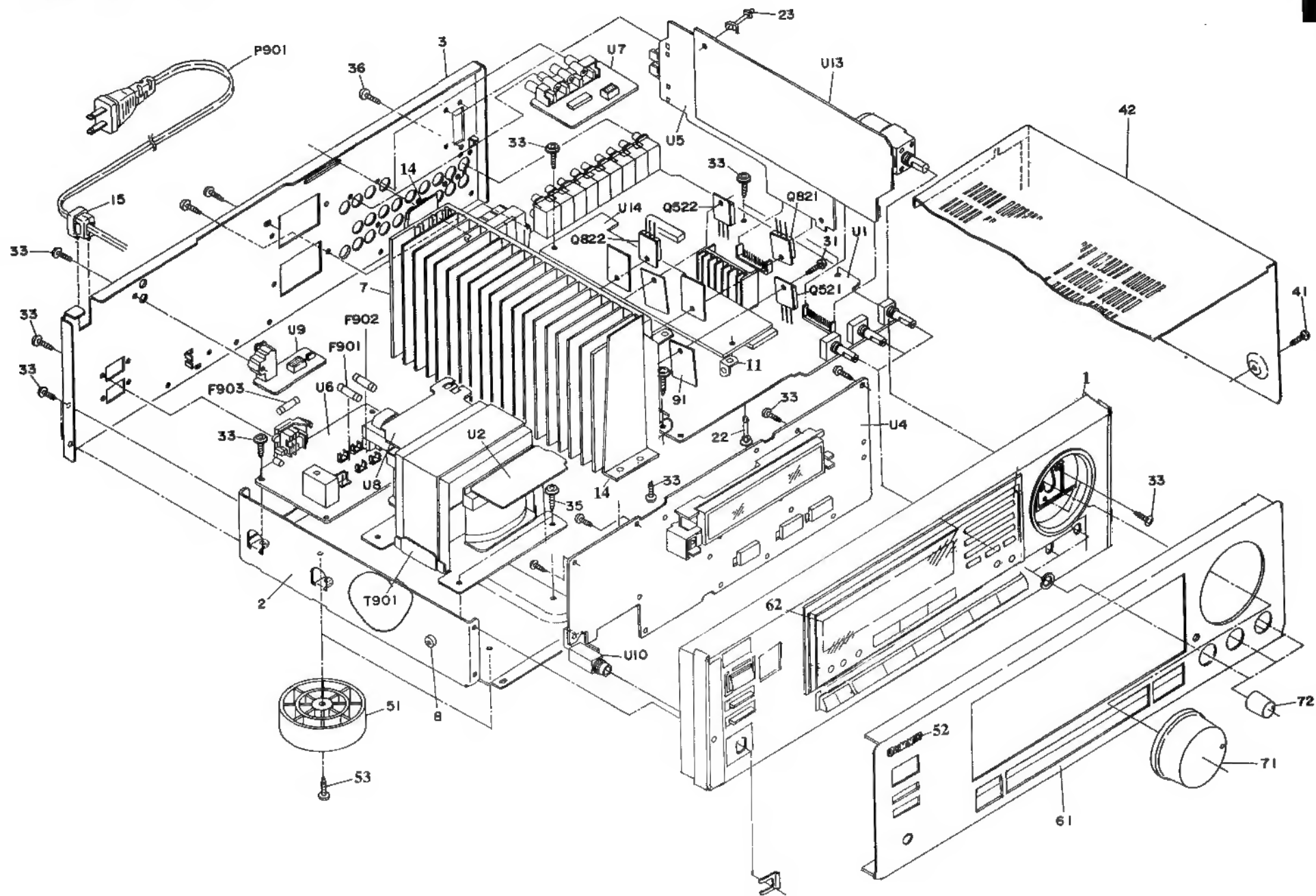


7. Changing the band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

	To 10 kHz	To 9 kHz
R727	Remove	10 ohm
R724	10 k ohm	Remove

EXPLODED VIEW



PARTS LIST

PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	2710956AY	Front Bracket
2	27100321AY	Chassis
3	27122276Y	Rear Panel <D>
	27122277Y	Rear Panel <P>
	27122278Y	Rear Panel <T>
	27122279Y	Rear Panel <W>
	2712280AY	Rear Panel <K>
	27122335Y	Rear Panel <A>
7	271600377Y	Radiator
11	27141530AY	Retainer
14	27141672Y	Retainer (H)
15	27300750	△ Cord Bushing, #2271
21	27190991	Holder, HGPS-16F
22	27190266Y	Holder, KGLS-12RF
23	27190896Y	Holder, KGLS-10S
31	801433	3MS8W.SW+14B(BC), Self-tapping screw
33	838130088	3TTB+8B, Self-tapping screw
35	830440089	4TTC+8C(BC), Self-tapping screw
36	838230088	3TTB+8B(ND), Self-tapping screw
41	838430088	3TTB+8B(BC), Self-tapping screw
42	28184663Y	Top Cover
51	27175319Y	Leg
51a	28141332Y	Cushion, t=1.5
52	28135244	Badge
53	831430088	3TTW+8B(BC), Self-tapping screw
62	28191755A	Clear Plate
69	27211870Y	Front Panel <D>
	27211871Y	Front Panel <P>
	27211872AY	Front Panel <T,W,K,A>
71	28325456Y	Knob (VOL)
72	28325454Y	Knob (TONE)
73	28325451Y	Knob (POW)
74	27267955Y	Guide (POW)
91	223024	* Isolation Sheet, AC238
D911	22380038 or 22380274	RBV602 or RS603M, Diode
P711	2047315012Y	NCF7-315012, Flexible Flat cable
F901	252164Y	△ 5A-UL, /T-237, Fuse <D,W>
F902	252075Y	△ 2.5A-SE-EAK, Fuse <K,A>
	252075Y	△ 2.5A-SE-EAK, Fuse <W>
F902,F903	252075Y	△ 2.5A-SE-EAK, Fuse <P,T>

REF.NO.	PART NO.	DESCRIPTION
P901	253192HITY or 253194MARY	△ AS-UC-6#18(SPT-2), AC Cord <D>
	253193HITY or 253195MARY	△ AS-CEE, AC Cord <P,T>
	253213WSE or 253211WSE	△ KS-AS, AC Cord <K>
	253197HITY	△ AS-SAA, AC Cord <A>
	253233KAW	△ AS-CEE-2, AC Cord <W>
P904,P905	25051570Y	△ NSCT-2P1357, AC Outlet <A>
	25051266	△ NSCT-2P1056, AC Outlet <K>
Q521,Q522	2203063	* 2SC5198-O, Transistor
Q523,Q524	2203053	* 2SA1941-O, Transistor
Q821	2203063	* 2SC5198-O, Transistor
Q822	2203043	* 2SC5197-O, Transistor
Q823	2203053	* 2SA1941-O, Transistor
Q824	2203033	* 2SA1940-O, Transistor
T901	2301221Y	△ NPT-1284D, Power Transformer <D>
	2301222	△ NPT-1284F, Power Transformer <P,A,T>
	2301223	△ NPT-1284DG, Power Transformer <W,K>
U1	1A722564-1AY	NAAR-5864-1A, Main circuit pc board ass'y <D>
	1A722564-1BY	NAAR-5864-1B, Main circuit pc board ass'y <P>
U2	1A722566-1AY	NAETC-5866-1A, Power Supply pc board ass'y <D>
	1A722566-1BY	NAETC-5866-1B, Power Supply pc board ass'y <P>
U4	1A722571-1AY	NADIS-5871-1A, Display circuit pc board ass'y <D>
	1A722571-1BY	NADIS-5871-1B, Display circuit pc board ass'y <P>
	1A722571-1CY	NADIS-5871-1C, Display circuit pc board ass'y <W>
	1A722571-1DY	NADIS-5871-1D, Display circuit pc board ass'y <T>
	1A722571-1EY	NADIS-5871-1E, Display circuit pc board ass'y <K>
	1A722571-1FY	NADIS-5871-1F, Display circuit pc board ass'y <A>
U5	1A722572-1AY	NARF-5872-1A, Tuner circuit pc board ass'y <D>
	1A722572-1BY	NARF-5872-1B, Tuner circuit pc board ass'y <P>
	1A722572-1CY	NARF-5872-1C, Tuner circuit pc board ass'y <W>
	1A722572-1DY	NARF-5872-1D, Tuner circuit pc board ass'y <T>
	1A722572-1EY	NARF-5872-1E, Tuner circuit pc board ass'y <K>
	1A722572-1FY	NARF-5872-1F, Tuner circuit pc board ass'y <A>
U6	1A722573-1AY	NAPS-5873-1A, Power Supply circuit pc board ass'y <D>
	1A722573-1BY	NAPS-5873-1B, Power Supply circuit pc board ass'y <P>
	1A722573-1CY	NAPS-5873-1C, Power Supply circuit pc board ass'y <W>
	1A722573-1DY	NAPS-5873-1D, Power Supply circuit pc board ass'y <T>
	1A722573-1EY	NAPS-5873-1E, Power Supply circuit pc board ass'y <K>
	1A722573-1FY	NAPS-5873-1F, Power Supply circuit pc board ass'y <A>
U7	1A722574-1AY	NAETC-5874-1A, Video circuit pc board ass'y <D>
	1A722574-1BY	NAETC-5874-1B, Video circuit pc board ass'y <P>
	1A722574-1CY	NAETC-5874-1C, Video circuit pc board ass'y <W>
	1A722574-1DY	NAETC-5874-1D, Video circuit pc board ass'y <T>

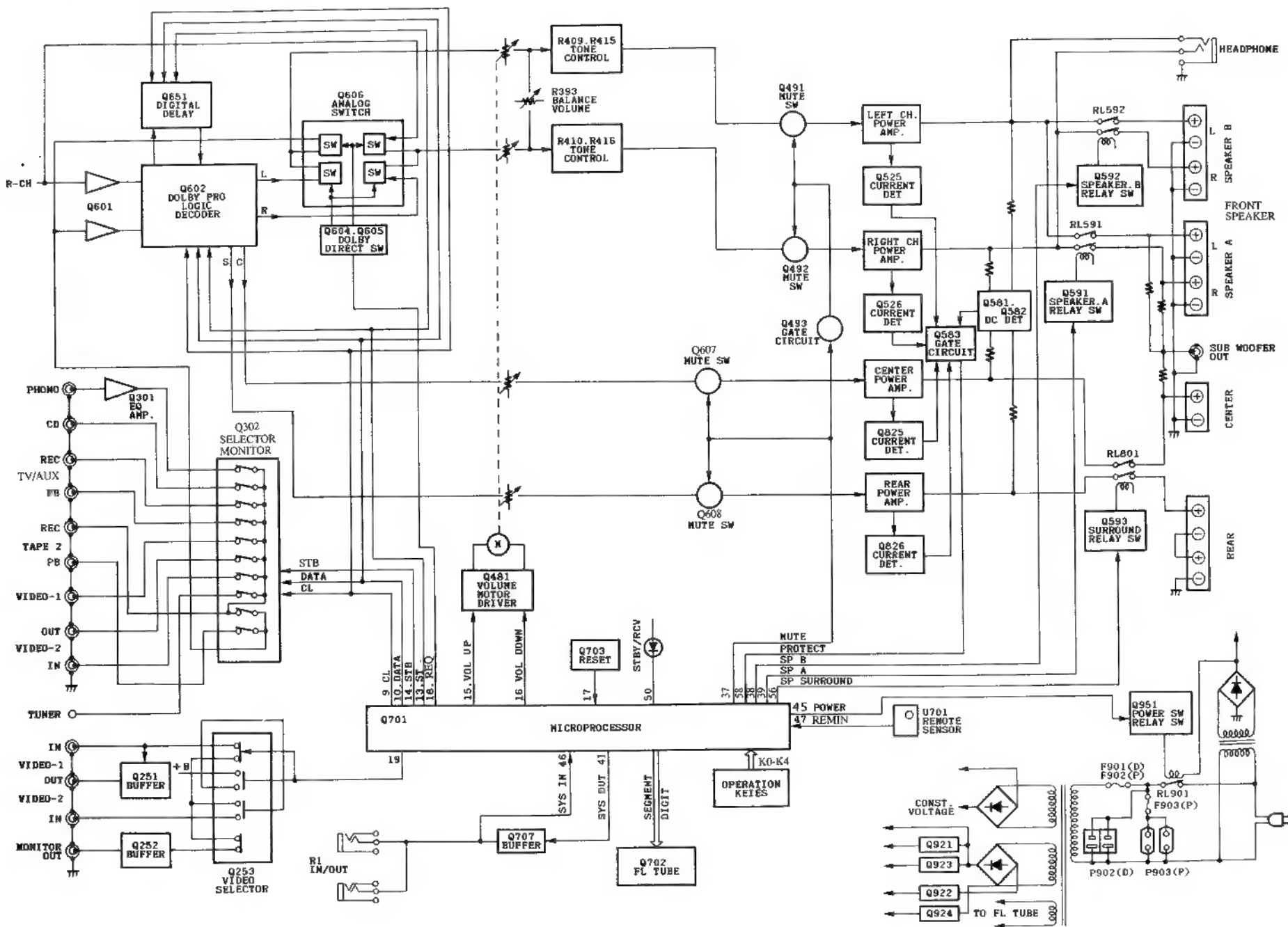
REF.NO.	PART NO.	DESCRIPTION
	1A722574-1EY	NAETC-5874-1E, Video circuit pc board ass'y <K>
	1A722574-1FY	NAETC-5874-1F, Video circuit pc board ass'y <A>
U8	1A722577-1AY	NAETC-5877-1A, Primary pc board ass'y <D>
	1A722577-1BY	NAETC-5877-1B, Primary pc board ass'y <P>
	1A722577-1CY	NAETC-5877-1C, Primary pc board ass'y <W>
	1A722577-1DY	NAETC-5877-1D, Primary pc board ass'y <T>
	1A722577-1EY	NAETC-5877-1E, Primary pc board ass'y <K>
	1A722577-1FY	NAETC-5877-1F, Primary pc board ass'y <A>
U9	1A722575-1AY	NAETC-5875-1A, RI Terminal pc board ass'y <D>
	1A722575-1BY	NAETC-5875-1B, RI Terminal pc board ass'y <P>
	1A722575-1CY	NAETC-5875-1C, RI Terminal pc board ass'y <W>
	1A722575-1DY	NAETC-5875-1D, RI Terminal pc board ass'y <T>
	1A722575-1EY	NAETC-5875-1E, RI Terminal pc board ass'y <K>
	1A722575-1FY	NAETC-5875-1F, RI Terminal pc board ass'y <A>
U10	1A722578-1AY	NAETC-5878-1A, Headphone Terminal pc board ass'y <D>
	1A722578-1BY	NAETC-5878-1B, Headphone Terminal pc board ass'y <P>
	1A722578-1CY	NAETC-5878-1C, Headphone Terminal pc board ass'y <W>
	1A722578-1DY	NAETC-5878-1D, Headphone Terminal pc board ass'y <T>
	1A722578-1EY	NAETC-5878-1E, Headphone Terminal pc board ass'y <K>
	1A722578-1FY	NAETC-5878-1F, Headphone Terminal pc board ass'y <A>
U13	1A722568-1AY	NAAF-5868-1A, Surround circuit pc board ass'y <D>
	1A722568-1BY	NAAF-5868-1B, Surround circuit pc board ass'y <P>
U14	1A722569-1AY	NAAF-5869-1A, Center and Reat Amplifier circuit pc board ass'y <D>
	1A722569-1BY	NAAF-5869-1B, Center and Reat Amplifier circuit pc board ass'y <P>

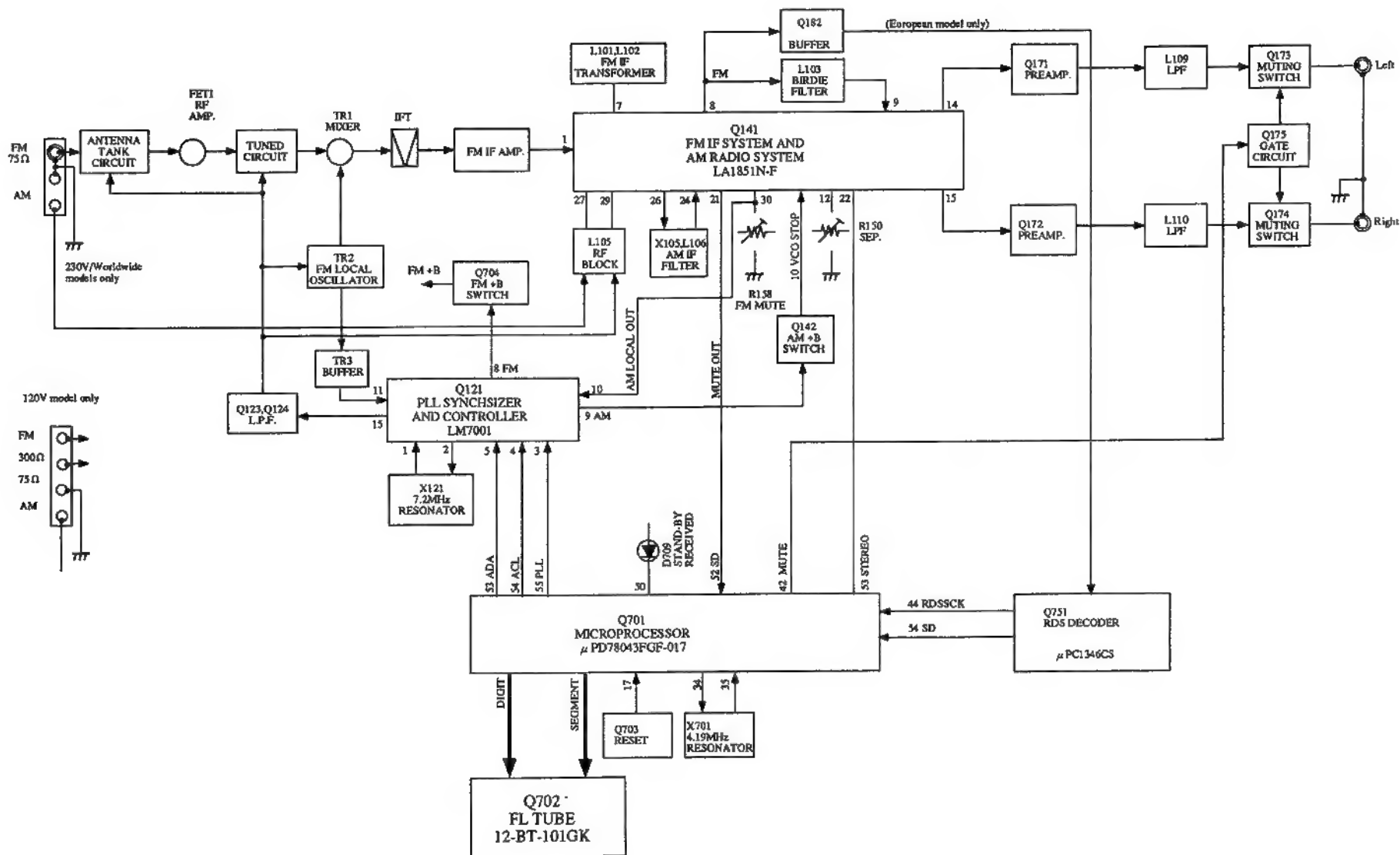
NOTE: THE COMPONENTS IDENTIFIED BY MARK △ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

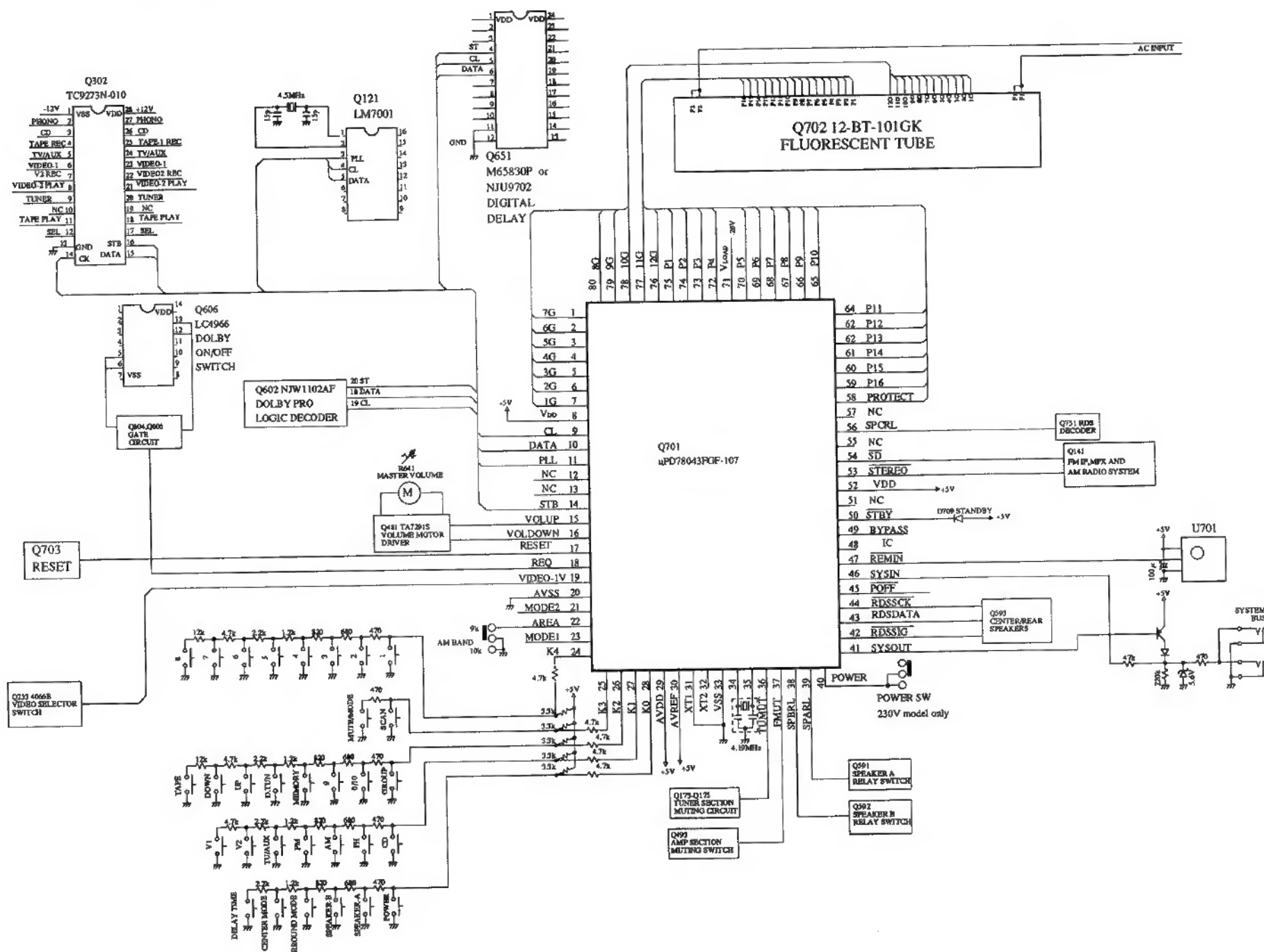
NOTE: <D>: 120V model only
<P>: 230V model only
<W>: Worldwide model only
<T>: Taiwanese model only
<K>: Korean model only
<A>: Australian model only

BLOCK DIAGRAM

TX-SV343







TERMINAL DESCRIPTION

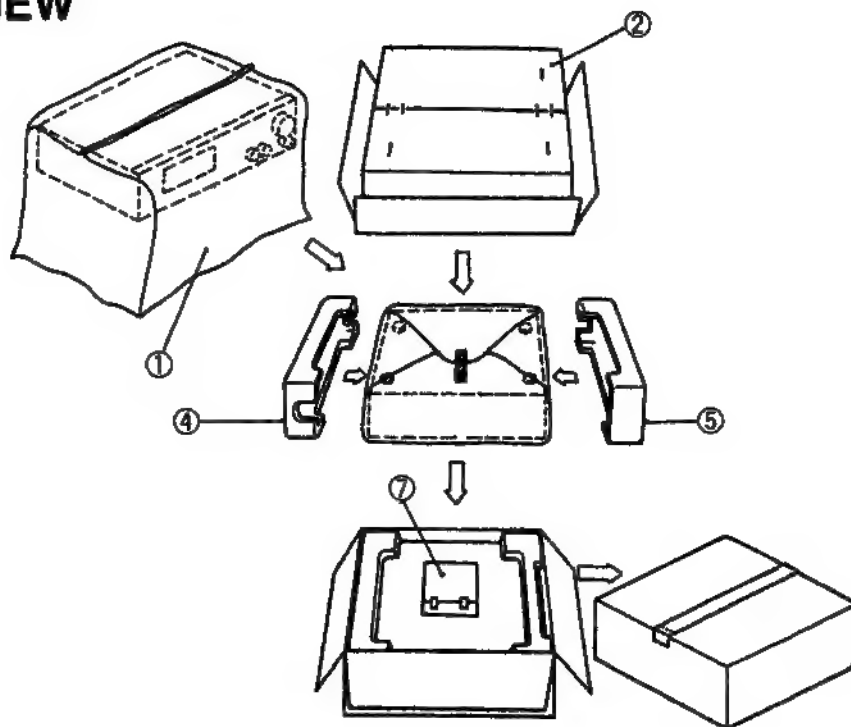
Q701 μ PD78043FGF-017

Pin No.	Function	I/O	Description
1~7	7G~1G	O	Grid control output pin. On at the high level.
8	VDD		Power supply pin (+5V).
9	CL	O	Clock output pin. Connect to the terminals CK of function switch Q302, Dolby Pro Logic Decoder Q602, digital delay Q651 and PLL IC Q121.
10	DATA	O	Data output pin. Connect to the terminals DATA of function switch Q302, Dolby Pro Logic Decoder Q602, digital delay Q651 and PLL IC Q121.
11	PLL	O	Chip enable output pin for PLL IC Q121.
12	NC		
13	NC		
14	STB	O	Chip enable output pin. Connect to the terminal STB of function switch Q302.
15	VOLUP	O	Volume control output pin.
16	VOLDOWN	O	Volume control output pin. (Refer table 1.)
17	RESET	I	System reset input pin
18	REQ	O	Connect to the terminal REQ of Dolby pro logic.
19	VIDEO-1V	O	Video switch control output pin. On at the high level.
20	AVSS		Ground pin of A/D converter
21	MODE2	I	A or B setting input pin.
22	AREA	I	Initializing input of band region
23	MODE1	I	Initializing input of operation mode
24	K4	I	Operation key connection pin
25	K3	I	Operation key connection pin
26	K2	I	Operation key connection pin
27	K1	I	Operation key connection pin
28	K0	I	Operation key connection pin
29	AVDD		Analogue power supply of A/D converter
30	AVREF		Reference voltage input pin of A/D converter
31	XT1		Crystal connection pin for sub system clock resonator
32	XT2		Not used.
33	VSS		Ground pin
34	X1		Resonator connection terminal for main system clock
35	X2		Connect the ceramic resonator 4.19MHz.
36	TUMUT	O	Muting output pin for tuner section.
37	FRONTMUT	O	Muting output pin for front amp.
38	SPBRL	O	Relay control pin for speaker B
39	CENT SP	O	Relay control pin for center speaker.
40	POWER	O	Power source control output pin
41	SYROUT	O	System code output pin
42	RDSSIG	I	Detector input pin of RDS broadcast. L:RDS broadcast
43	RDSDATA	I	Data input pin from RDS decoder uPD1346CS
44	RDSSCK	I	Clock input pin from RDS decoder IC uPD1346CS
45	POFF	I	Power stoppage detector input pin
46	SYSDIN	I	System code input pin
47	REMIN	I	Remote control signal input pin
48	IC		Internal connection pin. Connect to the ground terminal.
49	BYPASS	I	Bypass select output pin
50	STBY/RECV	O	Standby and received indicator output pin
51			
52	VDD		Power supply pin (+5V)
53	STEREO	I	Detector input pin of FM stereo broadcast
54	SD	I	Detector input pin of broadcast more than muting level
55	NC		
56	SPCRL	O	Relay control pin for center and rear speakers.
57	NC		
58	PROTECT		Detector input pin of protection circuit.
59~70	P16 - P5	O	Segment output pins. On at the high level.
71	VLOAD	I	Pull-down resistor connection pin of controller and driver of FL.
72~75	P4 - P1	O	Segment output pins. On at the high level.
76~80	12G~8G	O	Grid control output pins. On at the high level.

Operation	#15	#16
VOLUME UP	H	L
VOLUME DOWN	L	H
STOP	H	H

Table 1

PACKING VIEW



PACKING LIST

REF.NO.	PART NO.	DESCRIPTION
1	29100034-1AY	Styren Bag 850x650
2	29053093Y	Carton Box <D>
	29053094Y	Carton Box <W,T,K,A>
	29053095Y	Carton Box <P>
4,5	29091763Y	Pad (AS), L and R
	Accessory bag ass'y	
	232140	NMA-3057, AM Loop Antenna
	292111	FM Antenna <D>
	292112	FM Antenna <P>
	24140328Y	RC-328S, Remote Control transmitter
	3010194	UM-3, Batteries
	25055018	CV-1K-1, Conversion Plug <W>
	25065462	YAE21-0237, FM antenna Adapter <W,P,K,A>
	29361786Y	Label (MALAYSIA) <P,K>
	29362091Y	Label (EAN) AS <P,T,K>
	29362003-1	Label <D>
	29360708Y	Label (UL) <D>
	29362003-1Y	Label (UPC) AS <D>
	29342360Y	Instruction Manual, E
	29342361Y	Instruction Manual, U3FSI <P>
	29342362Y	Instruction Manual, U3GSwD <P>
	29342364Y	Instruction Manual, T <W,T>
	29355133AY	Instruction Sheet (DBP) <P>
	29355221	Instruction Sheet <K>
	29365019BY	Warranty Card <D>
	29358002KY	Service Station List <D>

ADJUSTMENT PROCEDURES

Preparation

1. Input

FM mono: 1 kHz, 75 kHz devi., 60 dB/ μ V

FM stereo: 1 kHz, 7.5 kHz devi., 60 dB/ μ V

Pilot signal :19 kHz,7.5 kHz devi.

AM : 400Hz ,30% mod.

2. Outputs

Connect the non-inductive type resistors of 8 ohms to the speaker terminals A unless otherwise noted.

3. Standard Knob Positions

Master Volume Control	Maximum
Bass Control	Center
Treble Control	Center
Balance Control	Center
Input Selector.....	CD
Tape (Monitor).....	Off
Muting	Off
Speaker	A on, B off
Dolby Surround	Off
Center Mode.....	Wide Band
Delay Time.....	20 ms
Center Level	0 dB
Rear Level	0 dB

IDLING CURRENT ADJUSTMENT

1. Connect the DC voltmeter to the terminals P521, P522 and P821(VCT and IID) on the main circuit pc board.
2. Adjust the trim resistors R533, R534 and R837 so that the indicator of voltmeter becomes 2.0mV.
3. After 4 - 6 minutes of heat runing, readjust R533 , R534 and R837 to get 5.5 - 6.0mV.

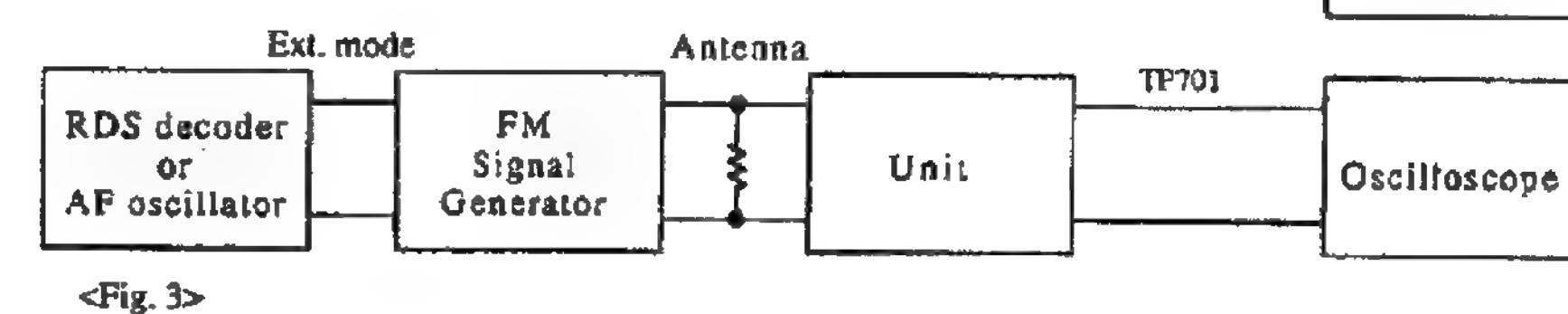
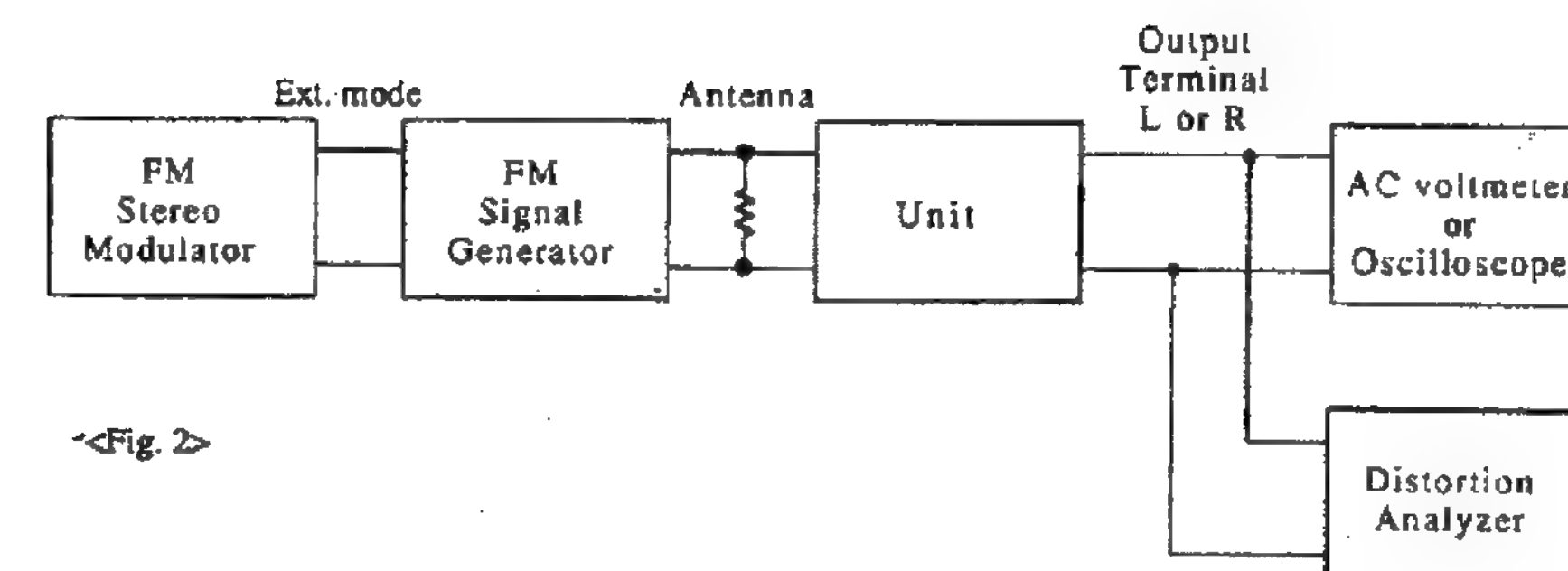
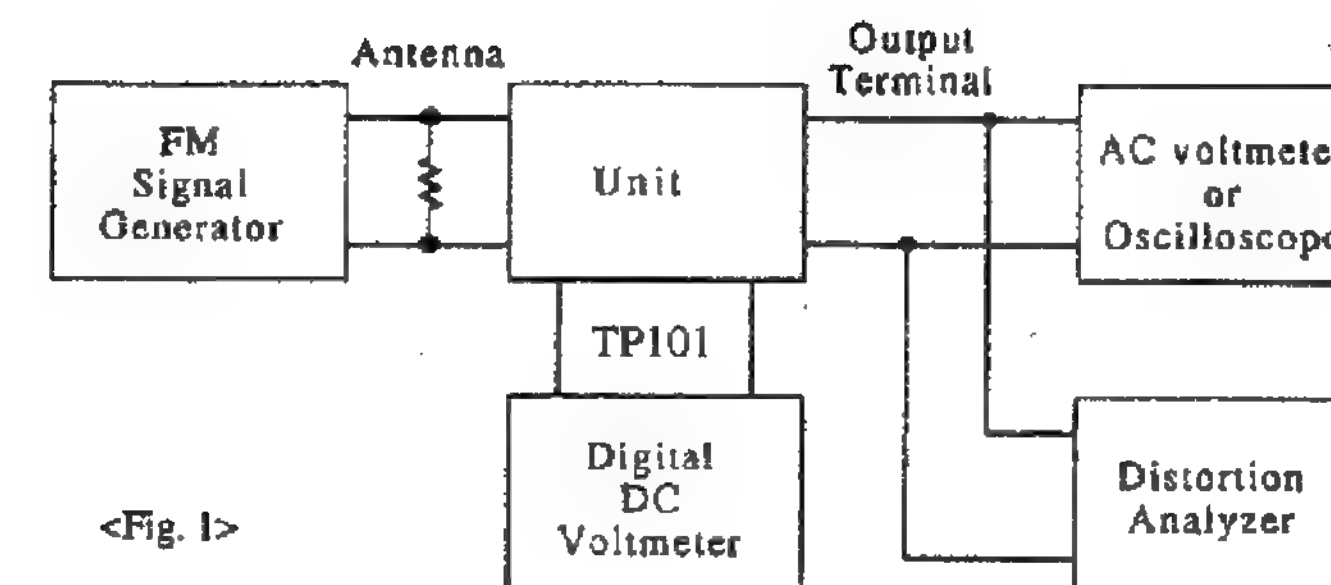
NOTE: Set Volume knob to the minimum position.

Set the unit to the test mode.

1. Press and hold down the CD button, then press the Power button.
2. "TEST-" is displayed on the display.
3. While "TEST-" is displayed, press the FM key.

FM ADJUSTMENT

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.0MHz	DC voltmeter	L101	0±20mV	FM MUTE/MODE switch:ON/STEREO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than ±180°
Stereo Separation	1	Fig.2	99.0MHz Ext. mod. 65dBf(60dB)	Channel L 1kHz	99.0MHz	Channel R AC voltmeter	R150	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig.2	99.0MHz 21.2dBf(16dB) <P/W Models> 23.2dBf(18dB) <D model>	—	99.0MHz	Oscilloscope or TUNED indicator	R158	Signal output or light on	
RDS		Fig.3	99.0MHz Ext. mod.40dB	RDS data or 57kHz 3% devi.	99.0MHz	Oscilloscope	R786	Maximum	European model only



AM ADJUSTMENT

120U model

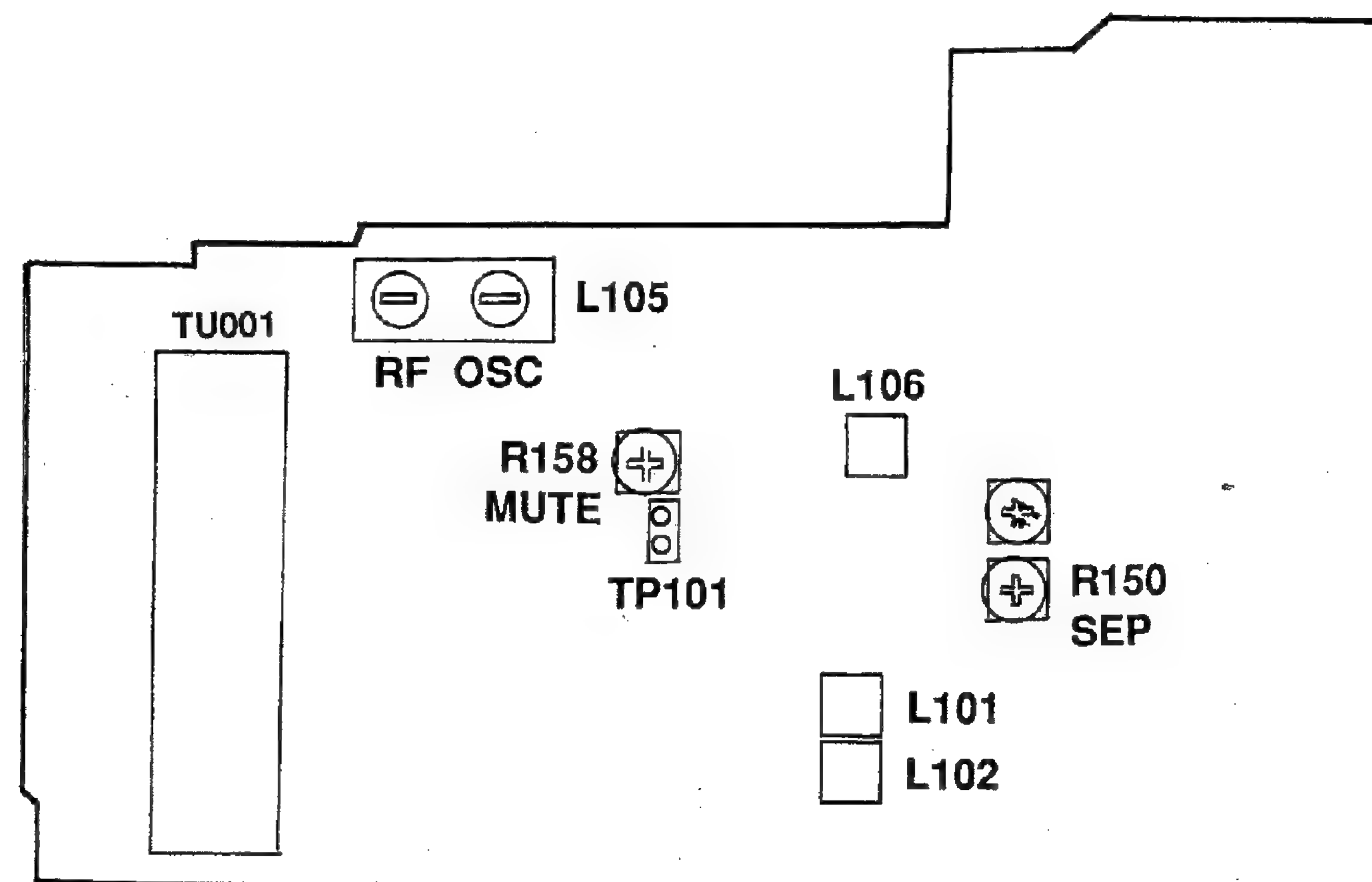
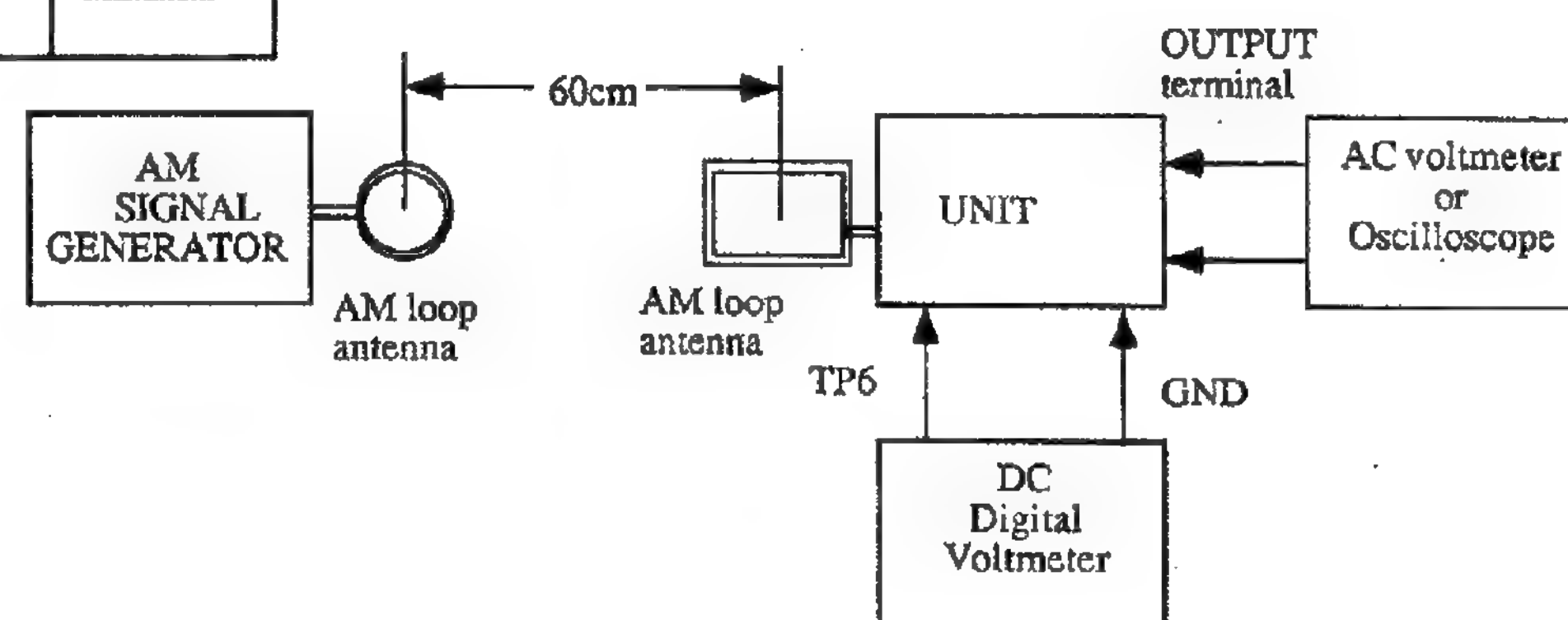
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L105	1.3±0.1V
2	600kHz 400Hz 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L106	Maximum

Reference Specification
FM tuned voltage: 87.9MHz~107.9MHz
More than 1.3V ~ Less than 10V
AM tuned voltage: 530kHz~1710kHz
1.3±0.2V ~ Less than 9.0V

230U and worldwide models

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz or 531kHz	Digital DC voltmeter	OSC coil on RF block L151	1.3±0.1V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L106	Maximum

Reference Specification
FM tuned voltage: 87.5MHz~108.0MHz
more than 1.3V ~ Less than 10V
AM tuned voltage: 522kHz~1611kHz
1.3±0.2V ~ Less than 9.0V (230V model)
AM tuned voltage: 531kHz~1602kHz
1.3±0.2V ~ Less than 9.0V (Worldwide model)



PRINTED CIRCUIT BOARD-PARTS LIST

U1 MAIN CIRCUIT PC BOARD (NAAR-5864-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q301	222502	NJM4558D-X
Q302	22240881	TC9273N-010
Q401,Q402	22240250	NJM2068L-D
Q481	22240239	TA7291S
Q921	222780125NEC	MPC78M12AHF
Q922	222790125	79M12HF
Q923	222780565JRC	NJM78M56FA
Transistors		
Q491,Q492	2213631	RN1241-A
Q493	2213510 or 2214350	DTA114ES or RN2202
Q501-Q504	2211733 or 2211732	* 2SC1845-E or * 2SC1845-F
Q505,Q506	2211353	2SA949-O
Q507,Q508	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q509,Q510	2213284	2SC1740S-R
Q511,Q512	2211353	2SA949-O
Q513,Q514	2211633	2SC2229-O
Q515,Q516	2213284	2SC1740S-R
Q517,Q518	2203010	* 2SC5171
Q519,Q520	2203000	* 2SA1930
Q525,Q526	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q527,Q528	2211353	2SA949-O
Q529,Q530	2211633	2SC2229-O
Q581,Q582	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q583	2211792	2SA992-F
Q591-Q593	2213640	DTC123JS
Q924	2211455	2SA1015-GR
Diodes		
D501,D502	22380260 or 22380032	RL1N4003 or 1SR139-100, GP104003E
D591,D592	223163	1SS133
D915-D921	22380260 or 22380032	Δ RL1N4003 or Δ 1SR139-100, GP104003E
D922	224472704	MTZJ27D, Zener
D923,D924	223163	1SS133
Coils		
L501,L502	231176S	S-1.3C
Capacitors		
C303,C304	354741009	10 μ F, 16V, Elect.
C307,C308	354721019	100 μ F, 6.3V, Elect.
C309,C310	374726224	6200pF ± 5%, 50V, Plastic
C311,C312	374721824	1800pF ± 5%, 50V, Plastic
C313-C316	354741009	10 μ F, 16V, Elect.
C391,C392	374721015	100pF ± 10%, 50V, Plastic
C401,C402,C407	354741009	10 μ F, 16V, Elect.
C411,C412	354741009	10 μ F, 16V, Elect.
C421,C422	374721534	0.015 μ F ± 5%, 50V, Plastic
C408	354741009	10 μ F, 16V, Elect.
C433,C434	374721534	0.015 μ F ± 5%, 50V, Plastic
C435,C436	374721015	100pF ± 10%, 50V, Plastic
C441	354721019	100 μ F, 6.3V, Elect.
C442	354780479	4.7 μ F, 50V, Elect.
C501,C502	354781009	10 μ F, 50V, Elect.
C503,C504	374721015	100pF ± 10%, 50V, Plastic
C507,C508	354724719	470 μ F, 6.3V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C513,C514	354722219	220 μ F, 6.3V, Elect.
C515,C516	354784719	470 μ F, 50V, Elect.
C521,C522	354784709	47 μ F, 50V, Elect.
C529,C530	374721044	0.1 μ F ± 5%, 50V, Plastic
C581	354721019	100 μ F, 6.3V, Elect.
C911	374731034	0.01 μ F ± 5%, 100V, Plastic
C915,C916	3504207	6800 μ F, 50V, Elect.
C918	354761029	1000 μ F, 35V, Elect.
C919	354763319	330 μ F, 35V, Elect.
C922-C925	354781009	10 μ F, 50V, Elect.
C926	354761019	100 μ F, 35V, Elect.
C928	354781019	100 μ F, 50V, Elect.
C932	354781009	10 μ F, 50V, Elect.
C983	374721034	0.01 μ F ± 5%, 50V, Plastic
Resistors		
R393	5104288	N11RCL, 250KWT20Z, Variable
R409,R415	5104356	N14RLC, 100KWT20Z, Variable
R511,R512	443525604	Δ 56ohm ± 5%, 1/2W, Metal oxide
R529-R532	443526804	Δ 68ohm ± 5%, 1/2W, Metal oxide
R533,R534	5210259	N06HR, 2KBC, Trim
R539,R540	443526804	Δ 68ohm ± 5%, 1/2W, Metal oxide
R541,R542	443525604	Δ 56ohm ± 5%, 1/2W, Metal oxide
R545,R546	4000132	RGC55, 0.22OHMK, Metal Plate
R551,R552	453630824	8.2ohm ± 5%, 1W, Metal
R563,R564	453530224	2.2ohm ± 5%, 1/2W, Metal
R565,R566	443623914	390ohm ± 5%, 1W, Metal oxide
R581,R582	443523314	Δ 330ohm ± 5%, 1/2W, Metal oxide
R583-R586	453530224	Δ 2.2ohm ± 5%, 1/2W, Metal
R933	443524704	47ohm ± 5%, 1/2W, Metal oxide
Relays		
RL591,RL592	25065517 or 25065485	NRL-2P5A-DC24-098 or NRL-2P2A-DC24-086
Plugs		
P211a	25055709	NPLG-13P665
P611a	25055678	NPLG-8P634
P612a	25055704	NPLG-8P660
P613a	25055708	NPLG-12P664
Pin Jack		
P301	25045460 or 25045303	NPJ-4PDBL281 or NPJ-4PDBL162
P302,P303	25045458 or 25045300	NPJ-6PDBL279 or NPJ-6PDBL159
P371	25045459 or 25045302	NPJ-1PDBL280 or NPJ-1PDBL161
Terminals		
P501	25060224 or 25060158	NTM-8PDML146 or NTM-8PDML084
P521,P522	25060062	2P-5
Radiator		
	27160209	RAD-67

U2 POWER SUPPLY PC BOARD (NAETC-5866-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors		
R921,R922	453530104	Δ 1ohm ± 5%, 1/2W, Metal

U4 DISPLAY CIRCUIT PC BOARD (NADIS-5871-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
IC		
Q701	22241055 or	MPD78043FGF-017 or

CIRCUIT NO.	PART NO.	DESCRIPTION
Q751	22241056	MPD78P044GF-343
	22240679	MPC1346CS <P>
	Transistors	
Q703	221282	DTC144ES
Q705,Q706	2213284	2SC1740S-R
Q707	2213510	DTA114ES
	FL Tube	
Q702	212156	12-BT-101GK
	Diodes	
D701,D702	223163 or 223205	1SS133 or 1SS270A
D703	224470913	MTZJ9.1C, Zener
D704,D705	223163 or 223205	1SS133 or 1SS270A
D706,D707	224470562	MTZJ5.6B, Zener
D708	223163 or 223205	1SS133 or 1SS270A
D709	225290	SEL4110R, LED
D710-D712	223163 or 223205	1SS133 or 1SS270A
D751	223163 or 223205	1SS133 or <P> 1SS270A
	Coils	
L701-L703	233454K220	NCH-1452, 220K
	Resonators	
X701	3010163	CST-4.19MGW, Ceramic
X751	3010203	AF6146CG <P>
	Capacitors	
C701	3000076 or 3000078	0.01F, 5.5V, Super
C702	375524744	0.47 μ F \pm 5%, 50V, Plastic
C703	354721019	100 μ F, 6.3V, Elect.
C704-C707	353780109	1 μ F(S), 50V, Elect.
C709,C711	354721019	100 μ F, 6.3V, Elect.
C751	354721019	100 μ F, 6.3V, Elect. <P>
C754	374724724	4700pF \pm 5%, 50V, Plastic <P>
C755,C756	374723324	3300pF \pm 5%, 50V, Plastic <P>
C757	354780229	2.2 μ F, 50V, Elect. <P>
C758	374724734	0.047 μ F \pm 5%, 50V, Plastic <P>
C759	374722234	0.022 μ F \pm 5%, 50V, Plastic <P>
C760	374724724	4700pF \pm 5%, 50V, Plastic <P>
	Resistors	
R708	49163103412	RM1/10U, 10K*12, Net
R786	5210265	N06HR, 50KBC, Trim <P>
	Switches	
S701-S713	25035652	NPS-111-S604
S715-S724	25035652	NPS-111-S604
S731-S738	25035652	NPS-111-S604
S739	25035653	NPS-122-L605, P SW <P>
	Socket	
P711b	25051875 or 25051335	NSCT-31P1662 or NSCT-31P1124, NSCT-31P727
	Plug	
TP701	25055038	NPLG-2P29 <P>
	Remote Sensor	
U701	24130011	PIC-12043TE2
	Holder	
	27190989	FL Display

U5 TUNER CIRCUIT PC BOARD (NARF-5872-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q121	22240090	LM7001
Q141	22240983	LA1851N-F
Q253	222840661	4066B
	Transistors	
Q101	2210746	2SC945A-P <P>
Q102	2211723	2SC1923-O
Q122	2213510	DTA114ES
Q123	2212445	2SK365-GR
Q124	2213284	2SC1740S-R
Q142	2213510	DTA114ES
Q143	221282	DTC144ES
Q144	2213640	DTC123JS
Q171,Q172	2213284	2SC1740S-R
Q173,Q174	2212794	2SD1468-R
Q175	2213510	DTA114ES
Q182	2213284	2SC1740S-R <P,W,K>
	Diode	
D165	224470512	MTZJ5.1B, Zener
	Coils and Transformers	
L101,L102	233457	NFIF-4081
L103	233471	NMC-6084 <P>
L104	233454K220	NCH-1452, 220K
L105	232174	NMRF-5077, RF Block
L106	232139	NMIF-4062, IF Trans
L107	233484	NMC-4085 <P>
L108	233484	NMC-4085 <P>
L109,L110	231092	NCH-2140
	Ceramic Filters	
X101	3010071	SFE10.7MA5, (RED)
X102	3010130	SFE10.7M22A <P>
X103	3010071	SFE10.7MA5, (RED)
	Resonators	
X104	3010268	CSB456F23
X105	3010123	SFZ-450JL
X121	3010141 or 3010158	XTL-7.2M, Crystal
	Capacitors	
C001	354741019	100 μ F, 16V, Elect.
C127	354721019	100 μ F, 6.3V, Elect.
C130	354780229	2.2 μ F, 50V, Elect.
C131	374722234	0.022 μ F, \pm 10%, 50V, Plastic
C132	354783399	0.33 μ F, 50V, Elect.
C133,C142	354741019	100 μ F, 16V, ELECT C
C145	354741009	10 μ F, 16V, Elect.
C146	374723324	3300pF, \pm 5%, 50V, Plastic
C147	374721034	0.01 μ F \pm 5%, 50V, Plastic <P>
C147	374721534	0.015 μ F \pm 5%, 50V, Plastic <D,T>
C149	354780479	4.7 μ F, 50V, Elect.
C151,C152	354780109	1 μ F, 50V, Elect.
C153	354783399	0.33 μ F, 50V, Elect.
C154	354741009	10 μ F, 16V, Elect.
C155	374721034	0.01 μ F \pm 5%, 50V, Plastic <D>
C155	374724724	4700pF \pm 5%, 50V, Plastic <P,K,A>
C155	374725624	5600pF \pm 5%, 50V, Plastic <W,T>
C156	374721034	0.01 μ F \pm 5%, 50V, Plastic <D>
C156	374724724	4700pF \pm 5%, 50V, Plastic <P,K,A>
C156	374725624	5600pF \pm 5%, 50V, Plastic <W,T>
C159	354780229	2.2 μ F, 50V, Elect.
C160	354784799	0.47 μ F, 50V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C162,C166	353741009	10 μ F,16V, Elect.
C171,C172	354741009	10 μ F,16V, Elect.
C173,C174	374721024	1000pF \pm 5%,50V,Plastic
C177	354780229	2.2 μ F,50V, Elect.
C178	354741009	10 μ F,16V, Elect.

Resistors

R150	5210261	N06HR, 5KBC, Trim
R158	5210264	N06HR, 30KBC, Trim

Socket

P211b	25051238	NSCT-13P1028
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Plug

TP101	25055038	NPLG-2P29
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Terminal

P101	25060239 or 25060195	NTM-4PDML161 or <D> NTM-4PDML117
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P101	25060222 or 25060117	NTM-2PDML144 or <P> NTM-2PDML051
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Front End

TU001	240098	ENV172D1G1 <D>
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240102

Shield Plate

27150394

U6 POWER SUPPLY CIRCUIT PC BOARD (NAPS-5873-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistor	
Q951	2213284	2SC1740S-R
	Diodes	
D951-D954	22380032	Δ 1SR139-100
D955	223163 or 223205	1SS133 or 1SS270A
	Transformers	
T902	2300670A	Δ NPT-1111D <D>
	2300671A	Δ NPT-1111P <P,T,A>
	2300672A	Δ NPT-1111DG <W,K>
	Capacitors	
C901	3500191	Δ DE7150F103M, IS C
C952	354742219	220 μ F,16V,Elect.
	Resistors	
R901	431533355	Δ 3.3M ohm, \pm 10%,1/2W, Solid
R951	453530824	8.2 ohm, \pm 5%,1/2W, Metal
	Switch	
S901	25065437	Δ NSS-22157P, Slide <W>
	Plug	
P901a	25055675	NPLG-2P631
	Rela	
RL901	25065515 or 25065508	Δ NRL-IP5A-DC12-096 or <D> NRL-IP10A-DC12-093
	Fuse Holder	
F901a,F902a	25050065	YSH403T <W>
F903a	25050065	YSH403T <P,T>
	AC Outlet	
P902	25051126	NSCT-4P913 <D>
P903	25051125	NSCT-4P912 <P,W,T>

U7 VIDEO CIRCUIT PC BOARD (NAETC-5874-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
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Transistors

Q251	2213284	2SC1740S-R
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Q252	2213284	2SC1740S-R
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CIRCUIT NO.	PART NO.	DESCRIPTION
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Diodes

D251	223163 or 223205	1SS133 or 1SS270A
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Capacitors

C251,C252	354721019	100 μ F,6.3V, Elect.
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C255,C256	354724719	470 μ F,6.3V,Elect.
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C257	354721019	100 μ F,6.3V,Elect.
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C259	354741019	100 μ F,16V,Elect.
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Jack

P251	25045462 or 25045339	NPJ-4PDYE283 or NPJ-4PDYE190
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U9 RI TERMINAL PC BOARD (NAETC-5875-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
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Switch

S961	25065286	NSS-22112, Slide <W>
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Jacks

P961	25045481	NPI-2PDBL299 <W>
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P962	25065425	M3 Terminal
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U10 HEADPHONE TERMINAL PC BOARD (NAETC-5878-1A/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
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Jacks

P503	25045255	YKB21-5009
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U13 SURROUND CIRCUIT PC BOARD (NAAF-5868-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
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ICs

Q601	22240247 or 22240293	BA15218N or NJM4558L-D
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Q602	22241053	NJW1102AF
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Q604	2212600	DTA124ES
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Q605	2213160	DTC124ES
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Q606	22240025	LC4966
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Q611	22240247 or 22240293	BA15218N or NJM4558L-D
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Q651	22240995 or 22240686	NJU9702 or M65830P
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Transistor

Q607,Q608	2213631	RN1241-A
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Diodes

D601,D651	224470562	MTZJ5.6B, Zener
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D652,D653	223163	1SS133
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Ceramic Lock

X651	3010217	CST2.04MG040
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Capacitors

C601,C602	354780229	2.2 μ F,50V,Elect.
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C605,C606	354781009	10 μ F,50V,Elect.
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C607	354744709	47 μ F,16V,Elect.
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C608	354741019	100 μ F,16V,Elect.
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C609	354762209	22 μ F,35V,Elect.
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C610	392842207	22 μ F,16V,Elect.
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C611-C614	374721044	0.01 μ F \pm 5%,50V,Plastic
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C615,C616	374726814	680pF \pm 5%,50V,Plastic
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C617,C618	374722234	0.022 μ F \pm 5%,50V,Plastic
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C619-C622	354781099	0.1 μ F,50V,Elect.
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C621,C622	354781099	0.1 μ F,50V,Elect.
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C623,C624	374724734	0.047 μ F \pm 5%,50V,Plastic
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C625-C628	354782299	0.22 μ F,50V,Elect.
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CIRCUIT NO.	PART NO.	DESCRIPTION
C629,C630	354780479	4.7 μ F,50V,Elect.
C631	354786899	0.68 μ F,50V,Elect.
C632	374724734	0.047 μ F \pm 5%,50V,Plastic
C633	374725624	5600pF \pm 5%,50V,Plastic
C634	374725614	560pF \pm 5%,50V,Plastic
C635	374721024	1000pF \pm 5%,50V,Plastic
C636	354780479	4.7 μ F,50V,Elect.
C637	354722219	220 μ F,6.3V,Elect.
C638	354781099	0.1 μ F,50V,Elect.
C639-C643	354781009	10 μ F,50V,Elect.
C644	354781099	0.1 μ F,50V,Elect.
C645	374724724	4700pF \pm 5%,50V,Plastic
C651	374722224	2200pF \pm 5%,50V,Plastic
C652,C653	374725614	560pF \pm 5%,50V,Plastic
C654,C655	374721044	0.1 μ F \pm 5%,50V,Plastic
C656	374725624	5600pF \pm 5%,50V,Plastic
C657	354744709	47 μ F,16V,Elect.
C658,C659	354781099	0.1 μ F,50V,Elect.
C660	354781009	10 μ F,50V,Elect.
C661,C662	354721019	100 μ F,6.3V,Elect.
C681-C684	354781009	10 μ F,50V,Elect.
R641	Resistor 5104347 Sockets	N16RQL, 100KBT25F, Variable
P611b	25051127	NSCT-8P914
P612b	25051233	NSCT-8P1023
P613b	25051237	NSCT-12P1027
P622a	Plug 25055405	NPLG-3P387

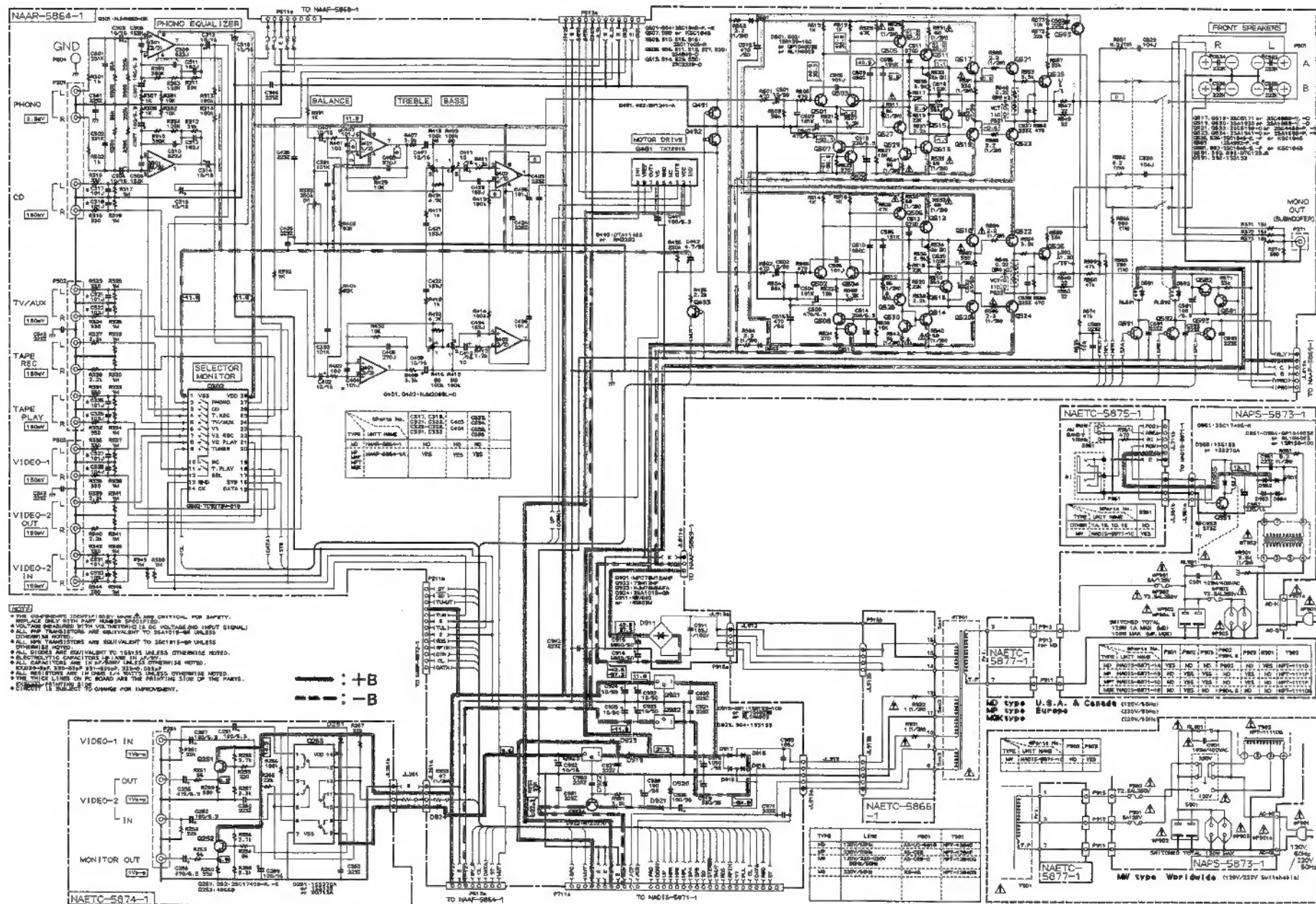
U14 CENTER AND REAR AMPLIFIER CIRCUIT PC BOARD (NAAF-5869-1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
Transistors		
Q803,Q804	2211633 or 2211634	2SC2229-O or 2SC2229-Y
Q805,Q806	2211353 or 2211354	2SA949-O or 2SA949-Y
Q807-Q810	2213284	2SC1740S-R
Q811,Q812	2211353 or 2211354	2SA949-O or 2SA949-Y
Q813,Q814	2211633 or 2211634	2SC2229-O or 2SC2229-Y
Q815,Q816	2213284	2SC1740S-R
Q817,Q818	2203010	2SC5171
Q819,Q820	2203000	2SA1930
Q825,Q826	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q831,Q832	2211353 or 2211354	2SA949-O or 2SA949-Y
Q833,Q834	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q835,Q836	2211733 or 2211732	2SC1845-E or 2SC1845-F
Diode		
D811	223163	1SS133
Coils		
L801,L802	231176	S-1.3C
Capacitors		
C801,C802	354781009	10 μ F,50V,Elect.
C807	354742219	220 μ F,16V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C808	354744709	47 μ F,16V,Elect.
C827,C828	374724734	0.047 μ F \pm 5%,50V,Plastic
C831	354781009	10 μ F,50V,Elect.
C867,C868	354780109	1 μ F,50V,Elect.
C869,C870	354721019	100 μ F,6.3V,Elect.
C881,C882	354780109	1 μ F,50V,Elect.
C883,C884	354781019	100 μ F,50V,Elect.
Resistors		
R825,826	443526804	68ohm \pm 5%,1/2W, Metal Oxid
R833-R836	443526804	68ohm \pm 5%,1/2W, Metal Oxid
R837	5215043	N08HR, 2KBC, Trim
R843,R844	443521014	100ohm \pm 5%,1/2W, Metal Oxid
R845,R846	4000132	RGC55, 0.22 OHMK, Metal Plate
R849,R850	443521004	10ohm \pm 5%,1/2W, Metal Oxid
R851,R852	453630824	8.2ohm \pm 5%,1W, Metal
R859,R863	453530224	2.2ohm \pm 5%,1/2W, Metal
R867-R870	453530224	2.2ohm \pm 5%,1/2W, Metal
R873,R874	443525604	56ohm \pm 5%,1/2W, Metal Oxid
Relay		
RL801	25065517 or 25065485	NRL-2P5A-DC24-098 or NRL-2P2A-DC24-086
Terminal		
P801	25060220 or 25060191	NTM-6PDM1142 or NTM-6PDM113
P821	25060062	2P-5

NOTE: <D>: 120V model only
 <P>: 230V model only
 <W>: Worldwide model only
 <T>: Taiwanese model only
 <K>: Korean model only
 <A>: Australian model only

5



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